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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,153	10/21/2003	Scott Damian Murphy		3440

7590  
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3272 Rosemary Lane  
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09/25/2007

EXAMINER
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TRAN, NHAN T

ART UNIT	PAPER NUMBER
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2622

MAIL DATE	DELIVERY MODE
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09/25/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/690,153	<b>Applicant(s)</b> MURPHY, SCOTT DAMIAN	
	<b>Examiner</b> Nhan T. Tran	<b>Art Unit</b> 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 8 is objected to because of the recitation of "the said sequential images creates a video image stream" which should be corrected to read as -- said sequential images create a video image stream --. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8-13, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over LeCompte (US 6,271,877).

Regarding claim 1, LeCompte discloses an imaging system (Figs. 3-9) configured to be deployed on a satellite (i.e., 300, 314) in Low Earth Orbit (see col. 5, line 45 – col. 6, line 42), comprising:

one or more imaging sensors (CCD arrays in 405 shown in Fig. 4) that are individually configured to be controlled by a pointing mechanism (optical & scan system 403 in combination with controller 401 shown in Fig. 4), via electrical signals, through at least two axes of motion namely rotation or translation or depth of field (see col. 6, lines

16-23 and col. 13, lines 12-16, 30-34) and, a controller sub-system (403) that receives commands from the onboard computer (401) and communication system (whole system shown in Fig. 4) and generates control signals that control actuators (actuators to drive gimbal mounted mirror) that control said image sensors (col. 13, lines 30-34) and, an onboard image processing system (combined units 407, 409, 411, 413, 415 shown in Fig. 4) wherein the said image data is prepared using, but not limited to, digital imagery compression techniques (i.e., MPEG 2) for transfer to the onboard communication system (see col. 14, lines 14-36) and, an onboard communication system (telemetry system 417 shown in Fig. 4) that can transmit the image stream to a remote transceiving station (i.e., ground station) that may be located on the ground, in the atmosphere (see col. 14, lines 14-36 and col. 12, line 41 – col. 13, line 3), and a remote transceiving station system (ground station) that is connected directly to the internet and can distribute said downlinked image data throughout the internet infrastructure as well as uplink the said image sensor's control commands (col. 12, line 41 – col. 13, line 3 and col. 14, line 14-20).

Although LeCompte does not explicitly disclose that said imaging sensors producing images sequentially and in temporal frequency at a rate faster than three images per second, LeCompte suggests that said imaging sensors producing images sequentially and in temporal frequency at a rate one frame/sec or faster (col. 20, lines 39-40).

Therefore, it would have been obvious to one of ordinary skill in the art to construct the imaging system in the satellite such that the imaging sensors would be

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able to produce images sequentially and in temporal frequency at a rate faster than three images per second in recognizing from LeCompte's suggestion above so as to enable capturing of smoother motion of continuous images in real-time.

Regarding claim 2, as shown in Figs. 4 & 8 of LeCompte, the image sensors are configured on a common platform that is subordinate to the spacecraft structure (col. 6, lines 16-23 and col. 18, lines 1-50).

Regarding claim 3, it is clear in LeCompte that said common platform is configured to allow for multiple viewing angles and field of views (see col. 15, line 41-56 and col. 13, lines 30-34).

Regarding claim 4, as seen in col. 13, lines 30-34 and col. 15, lines 41-56, said common platform is separately controlled, activated and deployed.

Regarding claim 5, LeCompte also discloses that said image sensors are mounted directly on spacecraft primary or secondary structure (see Figs. 4 & 8 and col. 13, lines 30-34 and col. 15, lines 41-56).

Regarding claim 6, since there are at least two image sensors (col. 15, lines 41-56), each is driven by optical & scan system (403) for moving the optical system of each

image sensor in different axes (Fig. 4, col. 13, lines 30-34), LeCompte also anticipates one or more redundant drive actuators for each axis of movement.

Regarding claim 8, LeCompte further discloses that said sequential images create a video image stream (col. 20, lines 39-40 and col. 14, lines 31-36).

Regarding claim 9, LeCompte clearly discloses that said image stream data is processed and compressed (i.e., MPEG 2) by some factor to reduce image data quantity (see col. 14, lines 31-36).

Regarding claim 10, as shown in Fig. 4 and col. 14, lines 14-36, said image stream is sent to the onboard communication system.

Regarding claim 11, it is also clear that the image stream is downlinked to a remote transceiving station (ground station shown in Fig. 4; col. 14, lines 15-20 and col. 12, lines 41-65).

Regarding claim 12, LeCompte discloses that the image stream is sent to an onboard data storage device (see Figs. 4 & 9 for buffer and RAM for storing image stream).

Regarding claim 13, this claim is also met by the analysis of claim 1.

Regarding claim 15, as shown in Fig. 8 of LeCompte, the image sensor subsystem is inherently protected by the satellite structure to prevent internal component impact.

Regarding claim 16, LeCompte further discloses that the remote transceiving station (ground station shown in Fig. 4) comprising: a receiving antenna and, a receiver (for receiving downlink from the satellite) and, a data handling system (inherent controller or processor of ground station) and, a local data storage device (RAM or memory of ground station) and, an internet link and, a power system and, a transmitter and, a transmitting antenna and, an antenna pointing system (see Figs. 3 & 4 and col. 12, line 41 – col. 13, line 3 and col. 14, lines 14-20).

Regarding claim 17, LeCompte further discloses that each image sensor is controlled by electronic shutter for controlling exposure and/or frame rate which represents a photon input modifying apparatus (see col. 15, lines 56-64 and col. 13, lines 43-46).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 7, 14 & 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over LeCompte (US 6,271,877) in view of Katsuyama et al. (US 5,460,341).

Regarding claim 7, although LeCompte discloses that the imaging system comprising a mechanism for adjusting the image sensor's field of view (col. 13, lines 13-17), LeCompte does not fairly teach that the image sensor's depth of focus is also altered.

However, it is well recognized by Katsuyama that an image sensor's depth of focus of a camera located on a spacecraft is adjusted by a compensation system for compensating the camera due to temperature changes, positioning errors or vibrations ascribable to launching, etc., so that the imaging system is maintained at an optimal condition for capturing high image quality (see Katsuyama, col. 1, lines 5-18, 55-64).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the imaging system in LeCompte to implement the mechanism for altering the image sensor's depth of focus to compensate disturbance caused by temperature changes, positioning errors or vibrations ascribable to launching so as to maintain the imaging system at an optimal condition for capturing high image quality as suggested by Katsuyama.



Regarding claim 14, see the analysis of claim 7, wherein the compensation system for compensating the optical system due to temperature changes represents a thermal control apparatus for said image sensor subsystem.

Regarding claim 18, although LeCompte and Katsuyama are silent about an aperture modulator, an Official Notice is taken that it is old and well known in the art for a camera to include an aperture modulator for regulating incident light impinging on the image sensor so as to better control exposure. Therefore, it would have been obvious to one of ordinary skill in the art to provide an aperture modulator in the combined imaging system of LeCompte and Katsuyama for better control exposure by regulating incident light impinging on the image sensor.

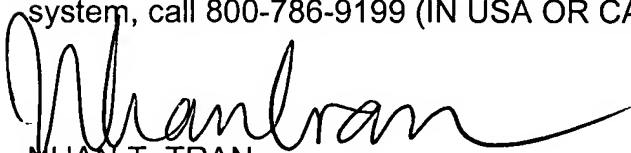
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (571) 272-7371. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Nhan T. Tran', with a long, sweeping horizontal stroke at the end.

NHAN T. TRAN  
Patent Examiner